We claim:

1. A method for enhancing plant growth or yield, comprising exposing soil to H_2 gas, and growing a plant in the soil.

2. The method of claim1, further comprising combining the soil exposed to H_2 with soil not exposed to H_2, and growing the plant in the thus combined soil.

3. The method of claim 2 wherein the amount of the combined soil which is the soil exposed to H_2 is between about 5% and 100%, by volume.

4. The method of claim1, wherein the soil exposed to H_2 is combined with soil in which the plant is already growing.

5. The method of claim 1, wherein a seed or plant is planted in soil not exposed to H_2 adjacent a volume of the soil exposed to H_2.

6. The method of claim1, wherein the soil exposed to H_2 is soil in which the plant is already growing.

7. The method of claim 1, wherein the H_2 gas is generated by the electrolysis of water.

8. The method of claim 7, wherein the H_2 gas is generated by providing an electrical current in the soil so as to generate H_2 directly within the soil.

9. The method of claim 1, wherein the H_2 gas is generated by H_2 evolving microorganisms.

10. The method of claim 9, wherein the H_2 evolving microorganisms are also N_2 fixing microorganisms.

11. The method of claim 1, wherein the H_2 gas is provided by a legume selected for its

ability to produce H_2 gas.

12. The method of claim 11, wherein the legume has HUP- symbiotic nitrogen-fixing bacteria.

13. The method of claim 11, wherein the legume has inefficient nitrogen-fixing bacteria.

14. The method of claim 11, wherein the legume has distributed nodulation.

15. The method of claim 11, wherein the legume has an enhanced number of nodules.

16. The method of claim 1, further comprising placing the soil in a container that minimizes the diffusion of H_2 therefrom, and applying H_2 to the soil in the container.

17. The method of claim 1, further comprising covering the soil with a membrane having a low permeability to H_2, and providing H_2 below the membrane, wherein at least a portion of the exposure of the soil to H_2 occurs beneath the membrane.

18. The method of claim 1, wherein the H_2 gas is provided to the soil via tubing or hollow probes placed in the soil.

19. A method for enhancing plant growth or yield, comprising:
obtaining a soil sample; and
exposing the soil sample to H_2 gas;
wherein said exposure of soil to H_2 enhances the ability of soil microorganisms to oxidize H_2; and
wherein said enhanced ability of the soil microorganisms potentiates enhanced growth or yield of a plant growing in said soil.

20. The method of claim 19, further comprising:
isolating the microorganisms, and

applying the microorganisms to soil, seeds, or plant roots;

wherein said application of microorganisms potentiates enhanced growth or yield of a plant.

21. The method of claim 20, further comprising culturing said microorganisms and applying the microorganisms to soil, seeds, or plant roots.

22. A method for enhancing plant growth or yield, comprising exposing soil to H_2 gas, obtaining an extract of the soil exposed to H_2 gas, and applying the extract to seeds, plant roots, or soil.

23. The method of claim 22, wherein the extract is an aqueous extract.